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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/611,949 | 07/03/2003 | Hiroshi Machara | 03500.015953.1 | 5406 |

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

| EXAMINER | |
|---|---|
| MCCLENDON, SANZA L | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1711 | |

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/611,949 | MAEHARA, HIROSHI | |
| | Examiner | Art Unit | |
| | Sanza L McClendon | 1711 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 10-13* is/are rejected.

7)☒ Claim(s) *7-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/987,790.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Bailey et al (4,476,255).

Bailey et al teaches photoreactive plastic compositions that are degradable by ultraviolet radiation. Said plastic compositions consist essentially of a photodegradable polymer having uniformly dispersed therein about 0.01 to 10-wt% of at least one photosenstizers. Said plastics are preferably polyethylene, polypropylene, poly (4-methyl-1-pentene), polystyrene, and polyvinyl chloride. These are deemed to anticipate the biodegradable resins because it is well known that plastics with C-C bonds in the main chain are biodegradable. Said photosensitizers can be selected from the list in columns 4-6, wherein the preferred compounds are peroxides—see column 4, lines 65 to the end, wherein said peroxide is deemed to anticipate the base generated by exposure to light because it decomposes to active OH- radicals (a base). Bailey et al teaches that said photosensitizers could be used in combinations, such as a tertiary amine and peroxide—see column 6,lines 43-45. This combination is deemed to anticipate claims 3, 11, and 12-13 because the tertiary amine, which is thermally active (i.e., accelerates when combined with the exothermic reaction of the decomposing peroxide radicals—which will anticipate claims 12-13), is combined with the peroxide, which is taught to by light active, wherein additionally it is known that peroxides are thermally unstable so inherently the process should degrade under thermal conditions because peroxide decomposes into OH- radical in the presence of heat, which will inherently anticipate claim 13. Said photosensitizers become photosensitive upon exposure to natural elements,

such as air, water, heat, and/or light. The inventions of claims 1-5 and 10-13 are anticipated by the reference.

3. Claims 1-6, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiquet (4,931,488).

Chiquet teaches degradable plastic compositions. Said plastic compositions comprise a (1) thermoplastic polymer, especially a-olefin polymers, to which have been added (a) a biologically degradable substance, (b) an iron compound in amounts from 0.05 to 5.0-wt%, and (c) oxidiable substance in amounts from 0.5 to 1.5-wt%, and, optionally, (d) transition metal catalyst in amounts, preferably, from 0.01 to 0.05%, wherein the total wt% of the light and/or heat responsive compounds are read within the limits of claims 4 and 5. Said oxidizable substance is a fatty acid and/or a fatty acid ester, which degrades under heat and/or ultraviolet light and/or insolation and/or under composting conditions, wherein degradation under heat and/or light anticipates the compounds in claims 1-3 and the methods of claims 10-13. Said biodegrable substance (a) can be a natural or esterified or etherified or modified starch, wherein other carbohydrates can be used also. Said iron compound (b) has the formula X-Fe, wherein X is an organic or inorganic acid radical.

Chiquet teaches said degradation processes in the composition proceeds such that upon exposure to ultraviolet radiation, light, or heat, free radicals, such as OH-, are formed due to the presence of the iron ions which react with the polymers to form other free radicals. Said new free radicals formed can react further with oxygen, with other chains, with iron ions, with a double bond of compound (c) and the like. Said polymer chains are split into small chains with or without oxygen-containing groups, such as alcohols, ketones, esters, etc. During the process iron ions act both as reaction promoters and initiators, whereas the oxidizable substance acts as a reaction promoter and especially as a chain splitter, since it forms peroxy and hydroperoxy compounds, and the starch compound acts as a promoter and, in conjunction with the iron ions, as co-initiator, because starch has hydroxyl groups which forms iron- (III) hydroxide complexes that are highly reactive. When the a transition metal catalyst is added it additionally accelerates the degradation process by attributing accelerating effects of the $Fe^{3+} \rightarrow Fe^{2+} \rightarrow Fe^{3+}$ cycle—see column 3, line 65 to column 4, line 15.

Claim 6 is deemed to anticipate because starch is well known as a polysaccharide in plant reserves.

*Allowable Subject Matter*

4. Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a resin composition comprising an agent generating an acid by light and/or agent generating a base by light in a hydrolysable and biodegradable resin, wherein said resin is D-glucose, wherein D-glucose is obtained by decomposition of cellulose or by the decomposition of paper.

*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

Sanza L McClendon
Examiner
Art Unit 1711

SMc
August 23, 2004